



Defense Finance and Accounting Service

**Your
Financial
Partner
@
Work**

XML Development Process
in context of
Business-Centric
Methodology
(DRAFT: Work In Progress)



DFAS Objectives

- DOD Enterprise Process
 - Procedures to develop collaborative XML artifacts
 - Within context of US Government Federated Architecture
 - Align with DoD Data Emporium
 - Collaborate with Commercial Communities of Interest and Federal Government Authoritative Data Stewards
 - Alignment: Convergence Task Force (DoD Enterprise)
 - Postal Address is the test artifact
- Business-Centric Methodology, layered approach
 - Conceptual Layer Resolve semantics
 - Business Layer Resolve requirements
 - Extension Layer Resolve alignment,
 outreach
 - Implementation Layer Resolve transactions,
 presentation

Lubash Pyramid

For Managing Information, Artifacts, Metadata as A

Flexibility through Context and Constraints



**Business
Integration**

Collaboration Partner
Agreements

Collaboration Partner
Profiles

5
Contract
Workflow
Process

BP Specification

4

3
Specifications

Messages

Schema

Assemblies

2
**Motivation
People**

Time

Rules

Events

Roles

**Technology
Integration**

1

Data/Codes

Services/Functions

Network

Nouns

Verbs

Transport
Routing, Packaging

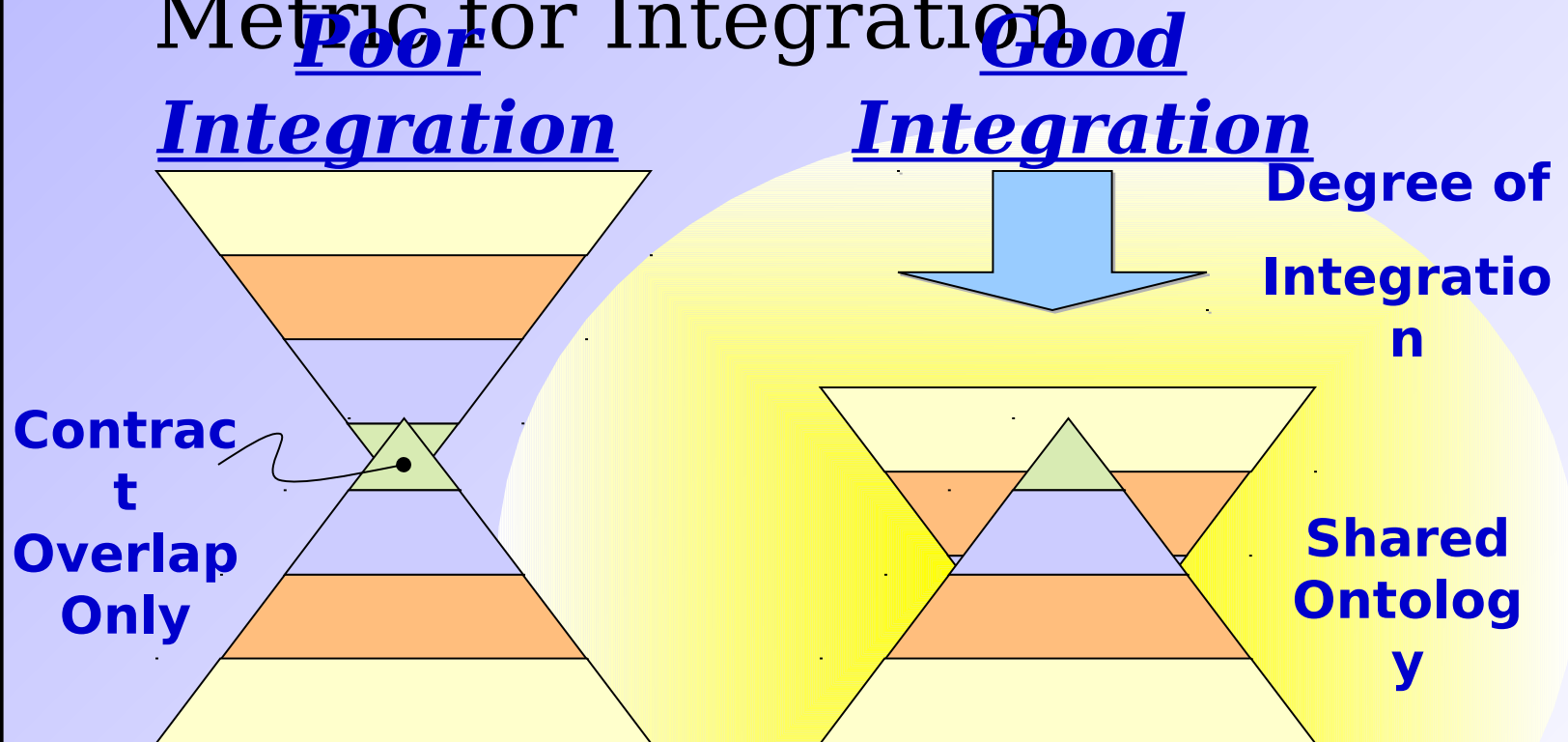
MSH/SOAP

XForms

Artifact
Relationships
Directory
Services
Metadata



Information Architecture Metric for Integration



Semantics, Semantics, Semantics



Embedded Metadata Section

Title: Embedded Metadata Section (EMS)

- **Problem:** How do we handle basic metadata associated with XML artifacts
- **Solution:** The EMS will be placed inside every DFAS XML Schema document to capture our known requirements:
 - **<xs:annotation><xs:appinfo>**
[Embedded Metadata Section]
</xs:appinfo></xs:annotation>
 - **<xs:appinfo>** preferred over **<xs:documentation>** because
 - **<xs:documentation>** is meant for human-readable text
 - **<xs:appinfo>** is for any machine-processible task, including generating web-based or paper-based documentation (i.e. human-readable text)
- **Consequences:**
 - Pros
 - Structured method of capturing a core set of metadata inside each schema
 - Is formally termed for communication among multiple stakeholders the “Embedded Metadata Section”
 - Provides for the movement/alignment with future registry concepts
 - Both machine and human readable
 - Designed for machine processing, e.g. indexing, searching, content management
 - Cons
 - Adds volume to the schema
 - If registry exists, possibility of data redundancy and configuration management arises



RDF + Dublin Core

- **Title:** Leveraging industry standards that support the business
- **Problem:** Historically, metadata has been approached with a “roll your own” philosophy
- **Solution:** Dublin Core + DFAS-extensions based on the Resource Description Framework (RDF)
- **Consequences:**
 - Pros
 - Alignment with open, extensible industry standards
 - Both standards based on XML
 - Both are simple, easy to understand, and use
 - Cons
 - Adds volume to the schema
 - Currency and management issues; need to keep current with standards



RDF + Dublin Core : Additional Points

- A core set (Version 1.1) of the Dublin Core Metadata Initiative elements is used (www.dublincore.org)

- In the core set, only the essential elements required to meet DFAS's minimum metadata requirements are deemed mandatory
- Opportunity of future extension (using RDF or alternate XML-based metadata mechanism) is available; for example, additional stakeholder requirements

- The Dublin Core elements and other DFAS-defined elements (later slide) will be included inside an RDF block which looks like:

<rdf:RDF>

<rdf:Description>

... Dublin Core elements and RDF / RDFS elements...

</rdf:Description>

</rdf:RDF>

- The **<xs:schema>** element will contain additional labeled namespace declarations to support the Dublin Core and RDF elements and attributes (in bold):

- **<xs:schema targetNamespace="http://www.dfas.mil/DFAS"**
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:dc="http://purl.org/dc/elements/1.1/">



RDF + Dublin Core : Additional Points

- Content for Dublin Core and RDF elements can take either of two forms:
- Content may be placed as the element value (between the element start tag and end tag):
 - **<rdf:type>DoD Classword Name</rdf:type>**
- Alternatively, the content may be placed as attributes on the element start tag, if some of the content can be expressed in URL form:
 - **<rdf:type rdf:resource="http://www.dfas.mil/DFAS/DoDClassword" rdfs:literal="Name"/>**
- Note, RDF prohibits taking a combination of the two approaches for a given element. The following is not allowed:
 - **<rdf:type rdf:resource="http://www.dfas.mil/DFAS/DoDClassword"> Name</rdf:type>**
- The “*metadata inside an element*” approach or the “*metadata inside the element’s attributes*” approach can be chosen on an element by element basis.
- The examples on the following two pages illustrate the above point.



Metadata Example

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="http://www.dfas.mil/DFAS"
xmlns:dc="http://purl.org/dc/elements/1.1/"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:DFAS="http://www.dfas.mil/DFAS">
  <xs:include schemaLocation="DFAS.LocalInfoType.2002-10-23.xsd"/>
  <xs:include schemaLocation="DFAS.RegionalInfoType.2002-10-23.xsd"/>
  <xs:complexType name="PostalAddressType">
    <xs:annotation><xs:appinfo>
      <rdf:RDF>
        <rdf:Description>
          <dc:title>Postal Address type</dc:title>
          <dc:description>The elements descriptive of the name and specific
physical
location</dc:description>
          <dc:source>DFAS, based on Electronic Commerce Code
Management Association (ECCMA) International Address Element Codes
(IAEC) and American National Standards Institute (ANSI) Accredited
Standards Committee (ASC) X12 elements</dc:source>
          <dc:date>2002-10-23</dc:date>
          <dc:identifier>DFAS.PostalAddressType.2002-10-
23.xsd</dc:identifier>
          <dc:creator>DFAS/DTB, Kit Lueder (MITRE)</dc:creator>
          <dc:subject>The elements descriptive of the name and specific
physical
```



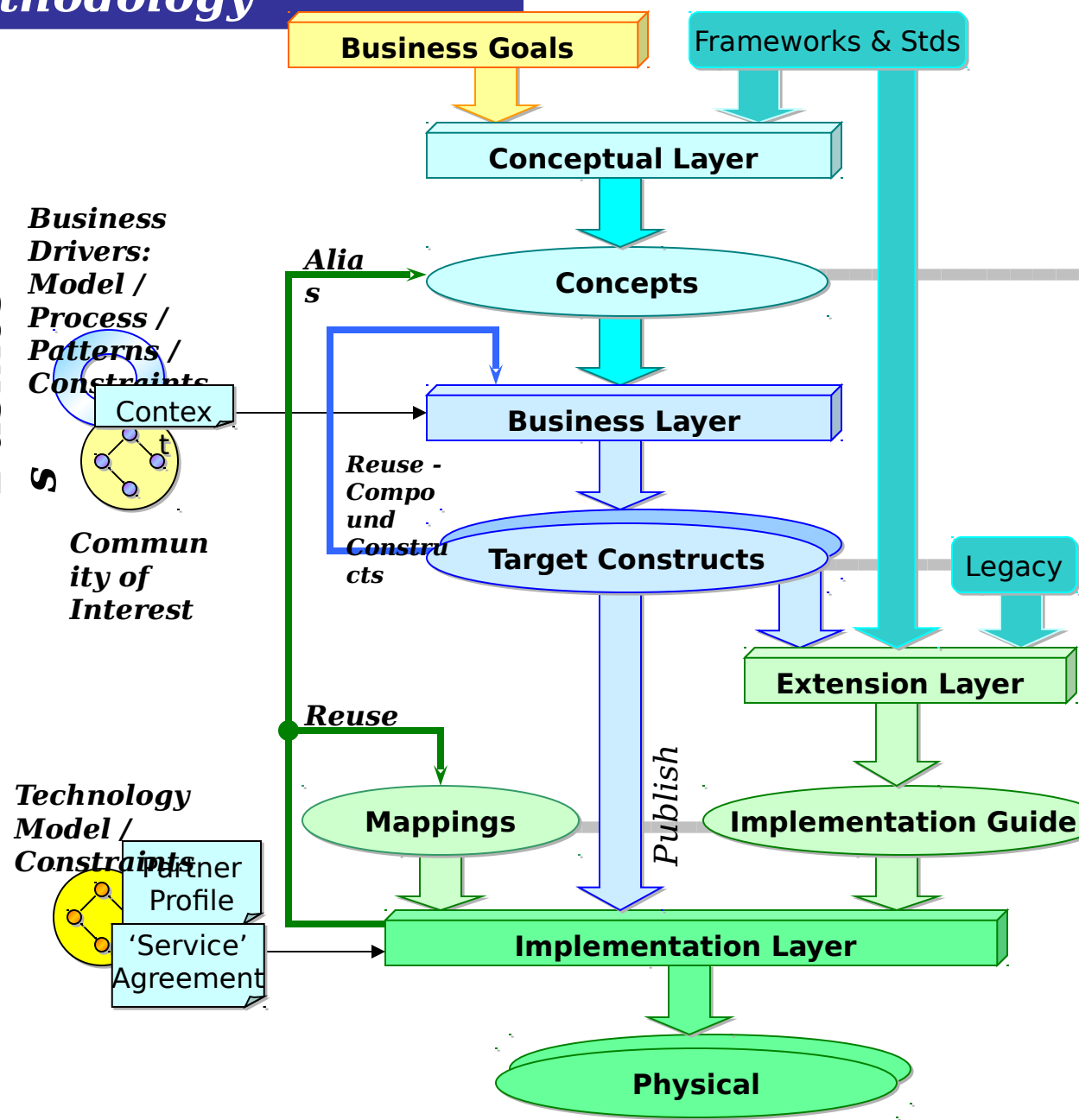
Metadata Example (Continued)

```
<dc:publisher>DFAS</dc:publisher>
  <dc:contributor>ECCMA and ANSI ASC X12</dc:contributor>
  <dc:type>Assembly</dc:type>
  <dc:relation>http://www.dfas.info</dc:relation>
  <dc:language>en</dc:language>
<rdf:type rdf:resource="http://www.dfas.mil/DFAS/DoDClassWord"
rdfs:Literal="Details"/>
  <rdfs:comment>
    Change Log, Version="2002-10-23", EditedBy="Kit Lueder", Initial
creation.
  </rdfs:comment>
</rdf:Description>
</rdf:RDF>
</xs:appinfo> </xs:annotation>
<xs:sequence>
  <xs:element name="CountryName" type="DFAS:CountryNameType"
    default="United States" minOccurs="0"/>
  <xs:element name="InternalRoutingInfo"
type="DFAS:InternalRoutingInfoType"
    minOccurs="0"/>
  <xs:element name="LocalInfo" type="DFAS:LocalInfoType"/>
  <xs:element name="RegionalInfo" type="DFAS:RegionalInfoType"/>
  <xs:element name="PostalControlInfo"
type="DFAS:PostalControlInfoType" minOccurs="0"/>
</xs:sequence>
</xs:complexType>
</xs:schema>
```

Business-Centric Methodology

Technology

Business

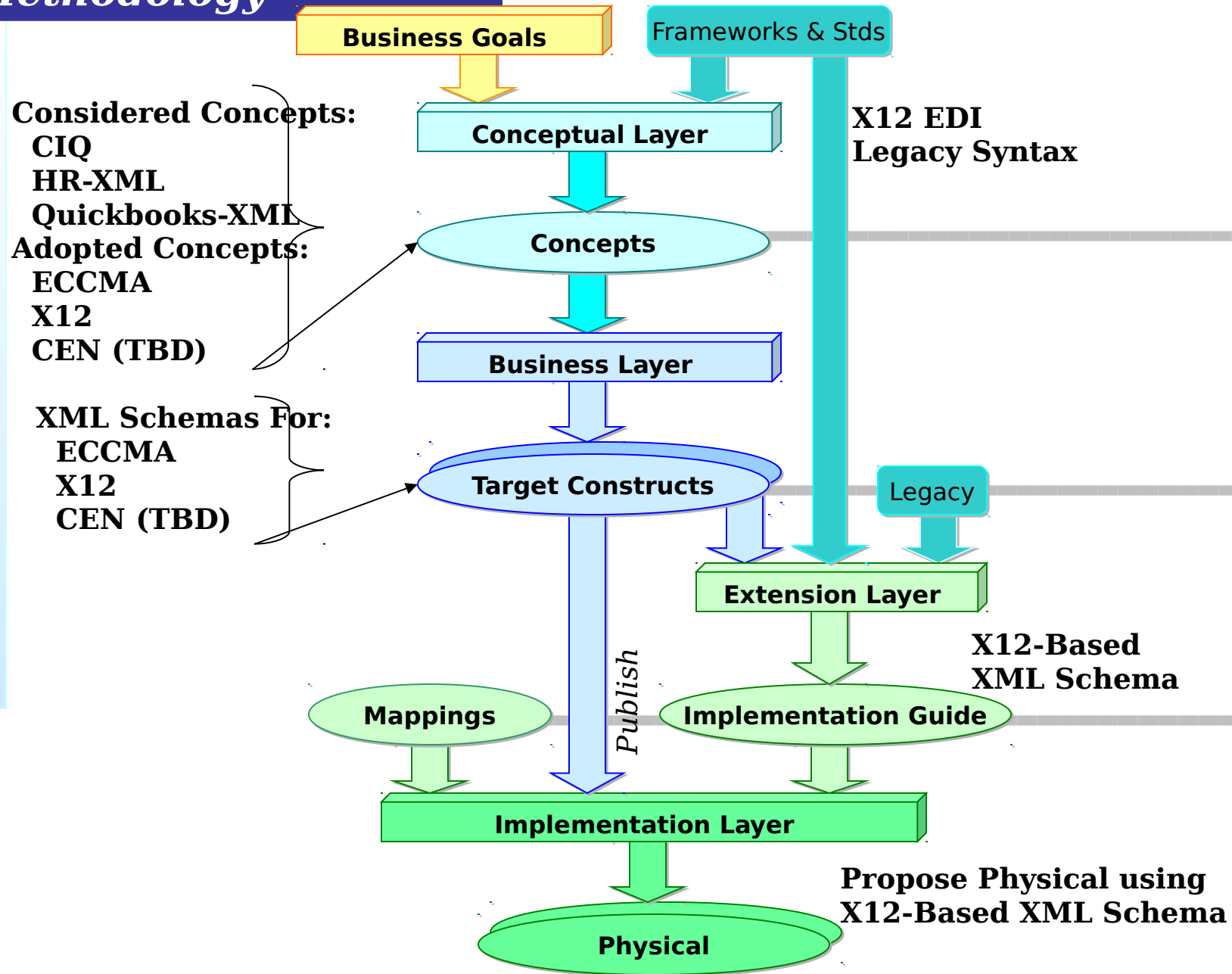


- Semantics**
- Define Business Context
 - Use Case and Sequence Diagrams
 - Identify Authoritative Sources
 - Register/Link Source Concepts
 - Register Internal Concepts
 - Assign Classification using Domain Ontology
 - Placement of business roles / patterns
 - Scope: atomic & construct articulation
 - Structure: Resolution, Indenture
 - Workflow & process identification
 - Mandatory vs. Optional
 - Sub-setting Codelists

- Outreach**
- Role-Process Identification
 - Standards & Framework Adoption
 - Qualifier to Object Breakout
 - Thesaurus Assignment
 - Transaction Mapping
- Presentation**

- Collaboration Partner Specifics
- Elements vs. Attributes
- Length Datatyping & Masking
- Routing & Packaging
- Service Parameters

Business-Centric Methodology





Business-Centric Methodology:

Define business context	Collaborative postal address & name, between USPS and DoD
Use case, sequence diagram	Use Case: Scopes the project, addr.taxonomy Sequence Diagram:N/ A; reusable artifact embedded in other processes
Identify authoritative sources	USPS, ECCMA, X12, CEN, OASIS CIQ, HR-XML, QuickBooks. (In priority order)
Register/ link source concepts	ECCMA chosen because: Endorsed by USPS; ECCMA attributes at atomic level.
Register internal concepts	XML Schema file of postal address based on ECCMA elements (named data types)
Assign classification	ECCMA single-layer groupings (name, address, administrative attributes), DoD Classword
Place in ontology for organization	DoD XML Registry, Finance namespace; promote to Enterprise NS if general interest



Business-Centric Methodology: Business Layer, Resolve

Document business rules & patterns	Rules: Default country=US. Require name, address-line, city, state, zip. Patterns: Hierarchical layers with bottom-up routing
Scope: atomic & construct artifacts	Atomic: individual ECCMA/ X12 attributes Construct: Postal address, name, addr lines Attributes grouped Name, Addr. Lines, City, State/ Prov., Post-Code, Country
Structure: resolution, indenture	Dual resolution: Hi res. using detailed elements, Low res. using concatenated fields
Workflow & process identification	N/ A; reusable artifact embedded in other processes
Mandatory vs. optional	General atomic & assembly artifacts optional. Mandatory N/ A determined by business rules
Sub-setting codelists (multi-field issue)	E.g., If country=US, State/ province code limited to the USPS code values for US.



Business-Centric Methodology: Extension Layer,

Role-process identification	N/ A; reusable artifact embedded in other processes
Standards & framework adoption	XML-based transaction syntax ECCMA postal & name attributes X12-based attributes (for legacy alignment) Resource Description Framework (RDF) & Dublin Core for metadata CEN (future, based on USPS adoption)
Qualifier to object breakout	"Urbanization" qualifies "BoxNumber" as Rural Route or APO (not discrete elements)
Thesaurus assignment	Spreadsheet to associate related attributes: in ECCMA, X12, with business mapping rules. E.g., ECCMA CityName to X12 City.
Interchange mapping	No ECCMA XML interchange. now. Near term: XML artifacts to legacy X12 EDI



Business-Centric Methodology:

Collaboration Partner specifies	DFAS Published: Specifies interchange generation and processing	Implementation Layer: Based Upon Implementation Agreement
Elements vs. attributes	Each artifact is an XML element, defined using named datatypes	
Length, datatyping & masking	Length unspecified Most datatypes are xsd:string Masking by xsd:enumeration or xsd:pattern	
Routing & packaging	N/ A; reusable artifact embedded in other constructs	
Service parameters	N/ A; reusable artifact embedded in other contexts	
Framework envelope	N/ A; reusable artifact embedded in other constructs	



Conclusions

Issue	Short-Term Solution	Limitations	Long-Term Solution
Housing; Concept, Target Constructs & Transactions	Concepts & Constructs: Named XML Schema Datatypes Transaction: Elements	Limited Inheritance; Copy & Paste	Configured in Registry, with specific XML generated
Configuration Control	Each component in separate file	Cost of editing, documenting and managing many files	Configured in Registry
Metadata Management	Annotation / ApplInfo RDF with Dublin Core	Cost of editing, documenting and managing many files	Configured in Registry via UID only in embedded metadata
Multi-field Requirements; Codelists, etc.	Enumeration and ApplInfo and Documentation; subset is difficult	Not meet "Multi-field Requirements"	Registry with process 'Context' versions
Meeting Collaboration Partner Specific Requirements with Generic Constructs	Copy & Paste	Cost of editing, documenting and managing many permutations	Registry-based with business driven templates to generate physical XML



PostalAddress Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="http://www.dfas.mil/DFAS"
xmlns:DFAS="http://www.dfas.mil/DFAS"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:dc="http://purl.org/dc/elements/1.1/">
```

```
<xs:complexType name="PostalAddressType">
```

[metadata declarations omitted]

```
<xs:sequence>
<xs:element name="CountryName" type="DFAS:CountryNameType" default="United
States" MinOccurs="0"/>
<xs:element name="NameInfo" type="DFAS:NameInfoType" minOccurs="1"/>
<xs:element name="InternalRoutingInfo" type="DFAS:InternalRoutingInfoType"
MinOccurs="0"/>
<xs:element name="LocalInfo" type="DFAS:LocalInfoType" minOccurs="1"/>
<xs:element name="RegionalInfo" type="DFAS:RegionalInfoType" minOccurs="1"/>
<xs:element name="PostalControlInfo" type="DFAS:PostalControlInfoType"
minOccurs="0"/>
</xs:sequence>
</xs:complexType>
</xs:schema>
```



NameInfo Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema [namespace declarations omitted]>

  <xs:complexType name="NameInfoType">
    <xs:choice>
      <xs:element name="Name" type="DFAS:NameType" minOccurs="0" maxOccurs="3"/>
      <xs:element name="PersonInfo" type="DFAS:PersonInfoType" minOccurs="1"/>
      <xs:element name="OrganizationInfo" type="DFAS:OrganizationInfoType"
minOccurs="1"/>
    </xs:choice>
  </xs:complexType>
</xs:schema>
```



LocalInfo Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?><xs:schema [namespace declarations
omitted]>
<xs:complexType name="LocalInfoType">
<xs:choice>
<xs:element name="AddressInfo" type="DFAS:AddressInfoType" minOccurs="0"/>
<xs:sequence>
<xs:element name="PrivateMailboxNumber" type="DFAS:PrivateMailboxNumberType"
minOccurs="0"/>
<xs:element name="HouseNumber" type="DFAS:HouseNumberType" minOccurs="0"/>
<xs:element name="HouseName" type="DFAS:HouseNameType" minOccurs="0"/>
<xs:element name="StairwellNumber" type="DFAS:StairwellNumberType"
minOccurs="0"/>
<xs:element name="Wing" type="DFAS:WingType" minOccurs="0"/>
<xs:element name="BuildingName" type="DFAS:BuildingNameType" minOccurs="0"/>
<xs:element name="PrefixStreetDirection" type="DFAS:PrefixStreetDirectionType"
minOccurs="0"/>
<xs:element name="StreetName" type="DFAS:StreetNameType" minOccurs="0"/>
<xs:element name="StreetNameSuffix" type="DFAS:StreetNameSuffixType"
minOccurs="0"/>
<xs:element name="SuffixStreetDirection" type="DFAS:SuffixStreetDirectionType"
minOccurs="0"/>
<xs:element name="SecondaryUnitIdentifier"
type="DFAS:SecondaryUnitIdentifierType" minOccurs="0"/>
<xs:element name="SecondaryUnitDesignator"
type="DFAS:SecondaryUnitDesignatorType" minOccurs="0"/>
<xs:element name="Urbanization" type="DFAS:UrbanizationType" minOccurs="0"/>
<xs:element name="BoxNumber" type="DFAS:BoxNumberType" minOccurs="0"/>
```




RegionalInfo Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema [namespace declarations omitted]>

<xs:complexType name="RegionalInfoType">
<xs:sequence>
<xs:element name="CityName" type="DFAS:CityNameType" minOccurs="0"/>
<xs:element name="StateName" type="DFAS:StateNameType" minOccurs="0"/>
<xs:element name="StatePostalAbbreviation"
type="DFAS:StatePostalAbbreviationType" minOccurs="0"/>
<xs:element name="Region" type="DFAS:RegionType" minOccurs="0"/>
<xs:element name="Province" type="DFAS:ProvinceType" minOccurs="0"/>
<xs:element name="ZIPCode" type="DFAS:ZIPCodeType" minOccurs="0"/>
<xs:element name="ZIPCodeAddendum" type="DFAS:ZIPCodeAddendumType"
minOccurs="0"/>
<xs:element name="InternationalPostalCode"
type="DFAS:InternationalPostalCodeType" minOccurs="0"/>
</xs:sequence>
</xs:complexType>
</xs:schema>
```



PersonInfo Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?><xs:schema [namespace declarations  
omitted]>  
<xs:complexType name="PersonInfoType">  
<xs:choice>  
<xs:element name="Name" type="DFAS:NameType" minOccurs="0" maxOccurs="3"/>  
<xs:sequence>  
<xs:element name="PrimaryHonorific" type="DFAS:PrimaryHonorificType"  
minOccurs="0"/>  
<xs:element name="PrimaryFirstName" type="DFAS:PrimaryFirstNameType"  
minOccurs="0"/>  
<xs:element name="PrimaryFirstMiddleName"  
type="DFAS:PrimaryFirstMiddleNameType" minOccurs="0"/>  
<xs:element name="PrimarySecondMiddleName"  
type="DFAS:PrimarySecondMiddleNameType" minOccurs="0"/>  
<xs:element name="PrimaryLastName" type="DFAS:PrimaryLastNameType"  
minOccurs="0"/>  
<xs:element name="PrimarySuffix" type="DFAS:PrimarySuffixType" minOccurs="0"/>  
<xs:element name="PrimaryGeneration" type="DFAS:PrimaryGenerationType"  
minOccurs="0"/>  
<xs:element name="PrimaryGenderCode" type="DFAS:PrimaryGenderCodeType"  
minOccurs="0"/>  
<xs:element name="PreferredFirstName" type="DFAS:PreferredFirstNameType"  
minOccurs="0"/>  
<xs:element name="ProfessionalTitle" type="DFAS:ProfessionalTitleType"  
minOccurs="0"/>  
<xs:element name="SecondaryHonorific" type="DFAS:SecondaryHonorificType"  
minOccurs="0"/>  
<xs:element name="SecondaryFirstName" type="DFAS:SecondaryFirstNameType"
```



OrganizationInfo Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema [namespace declarations omitted]>

  <xs:complexType name="OrganizationInfoType">
    <xs:sequence>
      <xs:element name="OrganizationName" type="DFAS:OrganizationNameType"
        minOccurs="0" maxOccurs="3"/>
      <xs:element name="EntityIdCode" type="DFAS:EntityIdCodeType" minOccurs="0"/>
      <xs:element name="IdCodeQual" type="DFAS:IdCodeQualType" minOccurs="0"/>
      <xs:element name="IdCode" type="DFAS:IdCodeType" minOccurs="0"/>
      <xs:element name="Mailee" type="DFAS:MaileeType" minOccurs="0"/>
      <xs:element name="OrganizationLegalStatus"
        type="DFAS:OrganizationLegalStatusType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```



InternalRoutingInfo Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema [namespace declarations omitted]>

  <xs:complexType name="InternalRoutingInfoType">
    <xs:sequence>
      <xs:element name="DepartmentName" type="DFAS:DepartmentNameType"
minOccurs="0"/>
      <xs:element name="DivisionName" type="DFAS:DivisionNameType" minOccurs="0"/>
      <xs:element name="Mailstop" type="DFAS:MailstopType" minOccurs="0"/>
      <xs:element name="BuildingType" type="DFAS:BuildingTypeType" minOccurs="0"/>
      <xs:element name="Floor" type="DFAS:FloorType" minOccurs="0"/>
      <xs:element name="SupplementaryDeliveryData"
type="DFAS:SupplementaryDeliveryDataType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```



PostalControlInfo Schema (Trimmed Down)

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema [namespace declarations omitted]>

  <xs:complexType name="PostalControlInfoType">
    <xs:sequence>
      <xs:element name="ZIPCodeDeliveryPointAddendum"
        type="DFAS:ZIPCodeDeliveryPointAddendumType" minOccurs="0"/>
      <xs:element name="ZIPCodeDeliveryPointBarcodeCheckdigit"
        type="DFAS:ZIPCodeDeliveryPointBarcodeCheckdigitType" minOccurs="0"/>
      <xs:element name="PostalDistrict" type="DFAS:PostalDistrictType" minOccurs="0"/>
      <xs:element name="PostalServiceCarrierRoute"
        type="DFAS:PostalServiceCarrierRouteType" minOccurs="0"/>
      <xs:element name="PostalServiceCarrierRouteLineOfTravel"
        type="DFAS:PostalServiceCarrierRouteLineOfTravelType" minOccurs="0"/>
      <xs:element name="PostalAlphaNumericEncodingTechniquePlanetCode"
        type="DFAS:PostalAlphaNumericEncodingTechniquePlanetCodeType" minOccurs="0"/>
      <xs:element name="CheckdigitForNineDigitZIPCode"
        type="DFAS:CheckdigitForNineDigitZIPCodeType" minOccurs="0"/>
      <xs:element name="ZIPCodeCheckdigitForFiveDigitZIP"
        type="DFAS:ZIPCodeCheckdigitForFiveDigitZIPTYPE" minOccurs="0"/>
      <xs:element name="Latitude" type="DFAS:LatitudeType" minOccurs="0"/>
      <xs:element name="LatitudeDirectional" type="DFAS:LatitudeDirectionalType"
        minOccurs="0"/>
      <xs:element name="Longitude" type="DFAS:LongitudeType" minOccurs="0"/>
      <xs:element name="LongitudeDirectional" type="DFAS:LongitudeDirectionalType"
        minOccurs="0"/>
    
```



Thank you!

**Your
Financial
Partner
@
Work**

Mike Lubash (DFAS)
mike.lubash@dfas.mil

Nauman Malik (XMLCG)
nauman.malik@dfas.mil

Kit Lueder (MITRE)
kit@mitre.org



Backup Slides



Explanation of Dublin Core Elements

- **<dc:title>** - A name given to the resource. Typically, a Title will be a name by which the resource is formally known. *[Conceptual business term]* **[Mandatory]**
- **<dc:description>** - An account of the content of the resource. Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content. *[Business definition from authoritative source]* **[Mandatory]**
- **<dc:source>** - A Reference to a resource from which the present resource is derived. Comment: The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system. *[Authoritative source that provided the description; if DFAS is the creator, then this field contains 'DFAS']* **[Mandatory]**
- **<dc:identifier>** - An unambiguous reference to the resource within a given context. Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Example formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN). *[UID; <Steward>.<ArtifactName>.<Version>.<FileType>]* *[Fixed Scheme / Pattern]* **[Mandatory]**

(DFAS use is italicized)

xmlns:dc="http://purl.org/dc/elementner @ Work



Explanation of Dublin Core Elements

- **<dc:date>** - A date associated with an event in the life cycle of the resource. Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [[W3CDTF](#)] and follows the YYYY-MM-DD format. *[Same as version; part of UID]* *[Fixed scheme]* *[Optional; information already captured in UID]*
- **<dc:creator>** - An entity primarily responsible for making the content of the resource. Examples of a Creator include a person, an organization, or a service. Typically, the name of a Creator should be used to indicate the entity. *[Always set to 'DFAS/(suborganization)']* *[Optional]*
- **<dc:subject>** - The topic of the content of the resource. Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme. *[Reference ontology: project, service, application or business line]* *[Optional]*
- **<dc:publisher>** - An entity responsible for making the resource available. Examples of a Publisher include a person, an organization, or a service. Typically, the name of a Publisher should be used to indicate the entity. *[Always set to 'DFAS']* *[Optional]*

(DFAS use is italicized)

xmlns:dc="http://purl.org/dc/element **ner @ Work**



Explanation of Dublin Core Elements

- **<dc:contributor>** - An entity responsible for making contributions to the content of the resource. Examples of a Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity. *[If developed on behalf of an authoritative source, e.g. Treasury, that organization's name appears here]* *[Optional]*
- **<dc:type>** - The nature or genre of the content of the resource. Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, the working draft list of Dublin Core Types [[DCT1](#)]). To describe the physical or digital manifestation of the resource, use the FORMAT element. *[Reference DFAS XML artifacts type list: 'Atomic', 'Unversioned Atomic' (for code lists), 'Assembly', and 'Transaction']* *[Fixed scheme]* *[Optional]*
- **<dc:format>** - The physical or digital manifestation of the resource. Typically, Format may include the media-type or dimensions of the resource. Format may be used to determine the software, hardware or other equipment needed to display or operate the resource. Examples of dimensions include size and duration. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [[MIME](#)] defining computer media formats). *[Optional]*

(DFAS use is italicized)

xmlns:dc="http://purl.org/dc/elements/1.1/"



Explanation of Dublin Core Elements

- **<dc:relation>** - A reference to a related resource. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system. *[Pointer to DFAS reference, e.g. a registry, web page]* *[Optional]*
- **<dc:coverage>** - The extent or scope of the content of the resource. Coverage will typically include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of coordinates or date ranges. *[Any business rules that apply to this artifact]* *[Optional]*

(DFAS use is italicized)

xmlns:dc="http://purl.org/dc/elementner @ Work



Explanation of Dublin Core Elements

- **<dc:rights>** - Information about rights held in and over the resource. Typically, a Rights element will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights. If the Rights element is absent, no assumptions can be made about the status of these and other rights with respect to the resource. *[Optional]*
- **<dc:language>** - A language of the intellectual content of the resource. Comment: Recommended best practice for the values of the Language element is defined by RFC 1766 [RFC1766] which includes a two-letter Language Code (taken from the ISO 639 standard [ISO639]), followed optionally, by a two-letter Country Code (taken from the ISO 3166 standard [ISO3166]). For example, 'en' for English, 'fr' for French, or 'en-uk' for English used in the United Kingdom. *[Defaults to 'en'] [Optional]*

(DFAS use is italicized)

xmlns:dc=*"http://purl.org/dc/element/1.1/"*ner @ Work



Explanation of RDF & RDFS Elements

<rdf:type>Name</rdf:type> - The `rdf:type` property indicates that a resource is a member of a class. *[DoD Class Word: {Amount, Angle, Area, Coordinate, Date, Dimension, Mass, Quantity, Rate, Temperature, Time, Volume, Weight, Code, Identifier, Name, Text}; DFAS additions, due to XML: {Choice, Details, List}]* **[Mandatory; based on DoD regulations]**

<rdfs:comment>

Change Log, Version="2002-10-04", EditedBy="Nauman Malik", Initial creation.

</rdfs:comment> - The `rdfs:comment` property is used to provide a human-readable description of a resource. *[A change history log element that captures change description and includes attributes for version and name of creator/modifier; note that since <rdfs:comment> cannot accommodate XML inside it, a string is used]* **[Optional]**

<rdfs:seeAlso> - The property `rdfs:seeAlso` is used to indicate a resource that might provide additional information about the subject resource. *[Basis of origination; e.g. this could be a database table that led to the origination of the artifact or a mapping to an existing resource, e.g. DB]* **[Optional]**

<rdf:Alt> - The `rdf:Seq` class represents RDF's 'Alt' container construct and is a subclass of `rdfs:Container`. *[Aliases; alternate terms similar in meaning]* **[Optional]**

(DFAS use is italicized)

xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"

xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"



Explanation of RDF & RDFS Attributes

rdf:resource - All things described by RDF are called resources, and are members of the class `rdfs:Resource`. *[Exclusively used to host a URI or URL that points to the resource in question.] [Optional]*

rdfs:literal - The class `rdfs:Literal` represents the self-denoting nodes called the 'literals' in the RDF graph structure. Property values such as textual strings are examples of RDF literals. *[A textual description that may accompany the rdf:resource attribute.] [Optional]*

(DFAS use is italicized)

xmlns:rdf=*"http://www.w3.org/1999/02/22-rdf-syntax-ns#"*

xmlns:rdfs=*"xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"*